

SEQUENCE LISTING

<110> Duke-Cohan, Jonathan S.
Schlossman, Stuart F.

<120> REGULATION OF IMMUNE RESPONSES BY ATTRACTIN

<130> 00530-089002

<140> US 09/787,097

<141> 2001-03-13

<150> PCT/US99/20948

<151> 1999-09-14

<150> US 60/100,137

<151> 1998-09-14

<160> 25

<170> FastSEQ for Windows Version 3.0

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<212> DNA

<213> Homo sapiens

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Ser Gly Leu Ile Val Pro Glu Arg Asp Gly Asn Glu Thr Val Pro Glu	
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Trp Leu Pro Leu Asn Arg Ser Val Asn Asn Val Val Val Arg Tyr Gly	
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His Ser Leu Ala Leu Tyr Lys Asp Lys Ile Tyr Met Tyr Gly Gly Lys	
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cat aat gag tca tgg gtg ttg ttg acc cct aag gca aag gag cag tat	1104
His Asn Glu Ser Trp Val Leu Leu Thr Pro Lys Ala Lys Glu Gln Tyr	
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Tyr Leu His Thr Ala Val Ile Val Ser Gly Thr Met Leu Val Phe Gly	
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 1090 1095 1100

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 1155 1160 1165

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 Phe Asp Phe Arg Asn His Pro Asn Ile Thr Phe Phe Val Tyr Val Ser
 1170 1175 1180

 aat ttc acc tgg ccc atc aaa att cag gtg caa act gaa caa 3594
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 <213> Homo sapiens

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Gly Trp Val	Gly Glu Gln Cys Gln	His Cys Gly Gly	Arg Phe Arg Leu
50	55	60	
Thr Gly Ser	Ser Gly Phe Val Thr	Asp Gly Pro Gly	Asn Tyr Lys Tyr
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Lys Thr Lys	Cys Thr Trp Leu Ile	Glu Gly Gln Pro	Asn Arg Ile Met
85	90	95	
Arg Leu Arg	Phe Asn His Phe Ala	Thr Glu Cys Ser	Trp Asp His Leu
100	105	110	
Tyr Val Tyr	Asp Gly Asp Ser Ile	Tyr Ala Pro Leu	Val Ala Ala Phe
115	120	125	
Ser Gly Leu	Ile Val Pro Glu Arg	Asp Gly Asn Glu	Thr Val Pro Glu
130	135	140	
Val Val Ala	Thr Ser Gly Tyr Ala	Leu Leu His Phe	Phe Ser Asp Ala
145	150	155	160
Ala Tyr Asn	Leu Thr Gly Phe Asn	Ile Thr Tyr Ser	Phe Asp Met Cys
165	170	175	
Pro Asn Asn	Cys Ser Gly Arg Gly	Glu Cys Lys Ile	Ser Asn Ser Ser
180	185	190	
Asp Thr Val	Glu Cys Glu Cys Ser	Glu Asn Trp Lys	Gly Glu Ala Cys
195	200	205	
Asp Ile Pro	His Cys Thr Asp Asn	Cys Gly Phe Pro	His Arg Gly Ile
210	215	220	
Cys Asn Ser	Ser Asp Val Arg Gly	Cys Ser Cys Phe	Ser Asp Trp Gln
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Arg Glu Glu	Tyr Ser Asn Leu Lys	Leu Pro Arg Ala	Ser His Lys Ala
260	265	270	
Val Val Asn	Gly Asn Ile Met Trp	Val Val Gly Gly	Tyr Met Phe Asn
275	280	285	
His Ser Asp	Tyr Asn Met Val Leu	Ala Tyr Asp Leu	Ala Ser Arg Glu
290	295	300	
Trp Leu Pro	Leu Asn Arg Ser Val	Asn Asn Val Val	Val Arg Tyr Gly
305	310	315	320
His Ser Leu	Ala Leu Tyr Lys Asp	Lys Ile Tyr Met	Tyr Gly Gly Lys
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Ala Val Val	Gly His Ser Ala His	Ile Val Thr Leu	Lys Asn Gly Arg
370	375	380	
Val Val Met	Leu Val Ile Phe Gly	His Cys Pro Leu	Tyr Gly Tyr Ile
385	390	395	400
Ser Asn Val	Gln Glu Tyr Asp Leu	Asp Lys Asn Thr	Trp Ser Ile Leu
405	410	415	
His Thr Gln	Gly Ala Leu Val Gln	Gly Gly Tyr Gly	His Ser Ser Val
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Tyr Asp His	Arg Thr Arg Ala Leu	Tyr Val His Gly	Gly Tyr Lys Ala
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Phe Ser Ala	Asn Lys Tyr Arg Leu	Ala Asp Asp Leu	Tyr Arg Tyr Asp
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 Tyr Leu His Thr Ala Val Ile Val Ser Gly Thr Met Leu Val Phe Gly
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 Ser Ser Asp Phe Met Ala Tyr Asp Ile Ala Cys Asp Arg Trp Ser Val
 515 520 525
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 545 550 555 560
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 565 570 575
 His Arg Ser Glu Ala Ala Cys Leu Ala Ala Gly Pro Gly Ile Arg Cys
 580 585 590
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 595 600 605
 Asp Glu Gln Glu Glu Lys Leu Lys Ser Glu Cys Phe Ser Lys Arg Thr
 610 615 620
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 625 630 635 640
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 Asn His Ser Cys Ser Glu Gly Gln Ile Ser Ile Phe Arg Tyr Glu Asn
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 Cys Pro Lys Asp Asn Pro Met Tyr Tyr Cys Asn Lys Lys Thr Ser Cys
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 Asn Ala Lys Leu Phe Cys Arg Asn His Asn Ala Leu Leu Ala Ser Leu
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 Phe Thr Asn Ser Leu Leu Gln Trp Met Pro Ser Glu Pro Ser Asp Ala
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 850 855 860
 Cys Gly Asp Cys Thr Ser Gly Ser Ser Glu Cys Met Trp Cys Ser Asn
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 930 935 940
 Gly Ser Tyr Lys Gly Pro Val Lys Met Pro Ser Gln Ala Pro Thr Gly
 945 950 955 960
 Asn Phe Tyr Pro Gln Pro Leu Leu Asn Ser Ser Met Cys Leu Glu Asp
 965 970 975
 Ser Arg Tyr Asn Trp Ser Phe Ile His Cys Pro Ala Cys Gln Cys Asn
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 Gly His Ser Lys Cys Ile Asn Gln Ser Ile Cys Glu Lys Cys Glu Asn
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 Ala Ser Leu Cys Asn Thr Asn Thr Gly Lys Cys Phe Cys Thr Thr Lys
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 Tyr Gln Phe Thr Phe Ser Leu Ser Gln Glu Asp Asp Arg Tyr Tyr Thr
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 Thr Gly Ser Ser Gly Phe Val Thr Asp Gly Pro Gly Asn Tyr Lys Tyr
 65 70 75 80
 Lys Thr Lys Cys Thr Trp Leu Ile Glu Gly Gln Pro Asn Arg Ile Met
 85 90 95
 Arg Leu Arg Phe Asn His Phe Ala Thr Glu Cys Ser Trp Asp His Leu
 100 105 110
 Tyr Val Tyr Asp Gly Asp Ser Ile Tyr Ala Pro Leu Val Ala Ala Phe
 115 120 125
 Ser Gly Leu Ile Val Pro Glu Arg Asp Gly Asn Glu Thr Val Pro Glu
 130 135 140
 Val Val Ala Thr Ser Gly Tyr Ala Leu Leu His Phe Phe Ser Asp Ala
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 Ala Tyr Asn Leu Thr Gly Phe Asn Ile Thr Tyr Ser Phe Asp Met Cys
 165 170 175
 Pro Asn Asn Cys Ser Gly Arg Gly Glu Cys Lys Ile Ser Asn Ser Ser
 180 185 190
 Asp Thr Val Glu Cys Glu Cys Ser Glu Asn Trp Lys Gly Glu Ala Cys
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 Asp Ile Pro His Cys Thr Asp Asn Cys Gly Phe Pro His Arg Gly Ile
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 Ala Ala Thr Ala Ala Leu Ala Gly Arg Ser Gly Gly Pro His Cys Val
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 Asn Gly Gly Arg Cys Asn Pro Gly Thr Gly Gln Cys Val Cys Pro Ala
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 Gly Trp Val Gly Glu Gln Cys Gln His Cys Gly Gly Arg Phe Arg Leu
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 Thr Gly Ser Ser Gly Phe Val Thr Asp Gly Pro Gly Asn Tyr Lys Tyr
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 Tyr Val Tyr Asp Gly Asp Ser Ile Tyr Ala Pro Leu Val Ala Ala Phe
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 Ser Gly Leu Ile Val Pro Glu Arg Asp Gly Asn Glu Thr Val Pro Glu
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 Val Val Ala Thr Ser Gly Tyr Ala Leu Leu His Phe Phe Ser Asp Ala
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Pro Asn Asn Cys Ser Gly Arg Gly Glu Cys Lys Ile Ser Asn Ser Ser	
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Asp Thr Val Glu Cys Glu Cys Ser Glu Asn Trp Lys Gly Glu Ala Cys	
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Trp Leu Pro Leu Asn Arg Ser Val Asn Asn Val Val Val Arg Tyr Gly	
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His Ser Leu Ala Leu Tyr Lys Asp Lys Ile Tyr Met Tyr Gly Gly Lys	
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Tyr Asp His Arg Thr Arg Ala Leu Tyr Val His Gly Gly Tyr Lys Ala				
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Phe Ser Ala Asn Lys Tyr Arg Leu Ala Asp Asp Leu Tyr Arg Tyr Asp				
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Leu Pro Arg Pro Asp Leu His His Asp Val Asn Arg Phe Gly His Ser				
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Val Trp Asn Thr Gly Ser Ser Gln Cys Ile Ser Trp Ala Leu Ala Thr				
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 <213> Homo sapiens

<400> 12

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Ala	Ala	Thr	Ala	Ala	Leu	Ala	Gly	Arg	Ser	Gly	Gly	Pro	His	Trp	Asp
			20					25					30		
Trp	Asp	Val	Thr	Arg	Ala	Gly	Arg	Pro	Gly	Leu	Gly	Ala	Gly	Leu	Arg
	35						40					45			
Leu	Pro	Arg	Leu	Leu	Ser	Pro	Pro	Leu	Arg	Pro	Arg	Leu	Leu	Leu	Leu
	50					55					60				
Leu	Leu	Leu	Leu	Pro	Pro	Pro	Leu	Leu	Leu	Leu	Leu	Leu	Pro	Cys	Glu
	65				70				75					80	
Ala	Glu	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Val	Ser	Gly	Ser	Ala	Ala	Ala
				85					90					95	
Glu	Ala	Lys	Glu	Cys	Asp	Arg	Pro	Cys	Val	Asn	Gly	Gly	Arg	Cys	Asn
			100					105					110		
Pro	Gly	Thr	Gly	Gln	Cys	Val	Cys	Pro	Ala	Gly	Trp	Val	Gly	Glu	Gln
		115					120					125			
Cys	Gln	His	Cys	Gly	Gly	Arg	Phe	Arg	Leu	Thr	Gly	Ser	Ser	Gly	Phe
	130					135					140				
Val	Thr	Asp	Gly	Pro	Gly	Asn	Tyr	Lys	Tyr	Lys	Thr	Lys	Cys	Thr	Trp
	145				150				155					160	
Leu	Ile	Glu	Gly	Gln	Pro	Asn	Arg	Ile	Met	Arg	Leu	Arg	Phe	Asn	His
				165				170						175	
Phe	Ala	Thr	Glu	Cys	Ser	Trp	Asp	His	Leu	Tyr	Val	Tyr	Asp	Gly	Asp
			180					185					190		
Ser	Ile	Tyr	Ala	Pro	Leu	Val	Ala	Ala	Phe	Ser	Gly	Leu	Ile	Val	Pro
		195					200					205			
Glu	Arg	Asp	Gly	Asn	Glu	Thr	Val	Pro	Glu	Val	Val	Ala	Thr	Ser	Gly
	210					215					220				
Tyr	Ala	Leu	Leu	His	Phe	Phe	Ser	Asp	Ala	Ala	Tyr	Asn	Leu	Thr	Gly
	225				230				235					240	
Phe	Asn	Ile	Thr	Tyr	Ser	Phe	Asp	Met	Cys	Pro	Asn	Asn	Cys	Ser	Gly
				245				250					255		
Arg	Gly	Glu	Cys	Lys	Ile	Ser	Asn	Ser	Ser	Glu	Thr	Val	Glu	Cys	Glu
			260				265						270		
Cys	Ser	Glu	Asn	Trp	Lys	Gly	Glu	Ala	Cys	Asp	Ile	Pro	His	Cys	Thr
	275					280						285			
Asp	Asn	Cys	Gly	Phe	Pro	His	Arg	Gly	Ile	Cys	Asn	Ser	Ser	Asp	Val

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Arg Gly Cys Ser Cys Phe Ser Asp Trp Gln Gly Pro Gly Cys Ser Val		
305	310	315
Pro Val Pro Ala Asn Gln Ser Phe Trp Thr Arg Glu Glu Tyr Ser Asn		
	325	330
Leu Lys Leu Pro Arg Ala Ser His Lys Ala Val Val Asn Gly Asn Ile		
	340	345
Met Trp Val Val Gly Gly Tyr Met Phe Asn His Ser Asp Tyr Asn Met		
	355	360
Val Leu Ala Tyr Asp Leu Ala Ser Arg Glu Trp Leu Pro Leu Asn Arg		
	370	375
Ser Val Asn Asn Val Val Val Arg Tyr Gly His Ser Leu Ala Leu Tyr		
385	390	395
Lys Asp Lys Ile Tyr Met Tyr Gly Gly Lys Ile Asp Pro Thr Gly Asn		
	405	410
Val Thr Asn Glu Leu Arg Val Phe His Ile His Asn Glu Ser Trp Val		
	420	425
Leu Leu Thr Pro Lys Ala Lys Glu Gln Tyr Ala Val Val Gly His Ser		
	435	440
Ala His Ile Val Thr Leu Lys Asn Gly Arg Val Val Met Leu Val Ile		
	450	455
Phe Gly His Cys Pro Leu Tyr Gly Tyr Ile Ser Asn Val Gln Glu Tyr		
465	470	475
Asp Leu Asp Lys Asn Thr Trp Ser Ile Leu His Thr Gln Gly Ala Leu		
	485	490
Val Gln Gly Gly Tyr Gly His Ser Ser Val Tyr Asp His Arg Thr Arg		
	500	505
Ala Leu Tyr Val His Gly Gly Tyr Lys Ala Phe Ser Ala Asn Lys Tyr		
	515	520
Arg Leu Ala Asp Asp Leu Tyr Arg Tyr Asp Val Asp Thr Gln Met Trp		
	530	535
Thr Ile Leu Lys Asp Ser Arg Phe Phe Arg Tyr Leu His Thr Ala Val		
545	550	555
Ile Val Ser Gly Thr Met Leu Val Phe Gly Gly Asn Thr His Asn Asp		
	565	570
Thr Ser Met Ser His Gly Ala Lys Cys Phe Ser Ser Asp Phe Met Ala		
	580	585
Tyr Asp Ile Ala Cys Asp Arg Trp Ser Val Leu Pro Arg Pro Asp Leu		
	595	600
His His Asp Val Asn Arg Phe Gly His Ser Ala Val Leu His Asn Ser		
	610	615
Thr Met Tyr Val Phe Gly Gly Phe Asn Ser Leu Leu Leu Ser Asp Ile		
625	630	635
Leu Val Phe Thr Ser Glu Gln Cys Asp Ala His Arg Ser Glu Ala Ala		
	645	650
Cys Leu Ala Ala Gly Pro Gly Ile Arg Cys Val Trp Asn Thr Gly Ser		
	660	665
Ser Gln Cys Ile Ser Trp Ala Leu Ala Thr Asp Glu Gln Glu Glu Lys		
	675	680
Leu Lys Ser Glu Cys Phe Ser Lys Arg Thr Leu Asp His Asp Arg Cys		
	690	695
Asp Gln His Thr Asp Cys Tyr Ser Cys Thr Ala Asn Thr Asn Asp Cys		
705	710	715
His Trp Cys Asn Asp His Cys Val Pro Arg Asn His Ser Cys Ser Glu		
	725	730
Gly Gln Ile Ser Ile Phe Arg Tyr Glu Asn Cys Pro Lys Asp Asn Pro		
	740	745
		750

Met Tyr Tyr Cys Asn Lys Lys Thr Ser Cys Arg Ser Cys Ala Leu Asp
 755 760 765
 Gln Asn Cys Gln Trp Glu Pro Arg Asn Gln Glu Cys Ile Ala Leu Pro
 770 775 780
 Glu Asn Ile Cys Gly Ile Gly Trp His Leu Val Gly Asn Ser Cys Leu
 785 790 795 800
 Lys Ile Thr Thr Ala Lys Glu Asn Tyr Asp Asn Ala Lys Leu Phe Cys
 805 810 815
 Arg Asn His Asn Ala Leu Leu Ala Ser Leu Thr Thr Gln Lys Lys Val
 820 825 830
 Glu Phe Val Leu Lys Gln Leu Arg Ile Met Gln Ser Ser Gln Ser Met
 835 840 845
 Ser Lys Leu Thr Leu Thr Pro Trp Val Gly Leu Arg Lys Ile Asn Val
 850 855 860
 Ser Tyr Trp Cys Trp Glu Asp Met Ser Pro Phe Thr Asn Ser Leu Leu
 865 870 875 880
 Gln Trp Met Pro Ser Glu Pro Ser Asp Ala Gly Phe Cys Gly Ile Leu
 885 890 895
 Ser Glu Pro Ser Thr Arg Gly Leu Lys Ala Ala Thr Cys Ile Asn Pro
 900 905 910
 Leu Asn Gly Ser Val Cys Glu Arg Pro Ala Asn His Ser Ala Lys Gln
 915 920 925
 Cys Arg Thr Pro Cys Ala Leu Arg Thr Ala Cys Gly Asp Cys Thr Ser
 930 935 940
 Gly Ser Ser Glu Cys Met Trp Cys Ser Asn Met Lys Gln Cys Val Asp
 945 950 955 960
 Ser Asn Ala Tyr Val Ala Ser Phe Pro Phe Gly Gln Cys Met Glu Trp
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 Tyr Thr Met Ser Thr Cys Pro Pro Glu Asn Cys Ser Gly Tyr Cys Thr
 980 985 990
 Cys Ser His Cys Leu Glu Gln Pro Gly Cys Gly Trp Cys Thr Asp Pro
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 Ser Asn Thr Gly Lys Gly Lys Cys Ile Glu Gly Ser Tyr Lys Gly Pro
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 Val Lys Met Pro Ser Gln Ala Pro Thr Gly Asn Phe Tyr Pro Gln Pro
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 Leu Leu Asn Ser Ser Met Cys Leu Glu Asp Ser Arg Tyr Asn Trp Ser
 1045 1050 1055
 Phe Ile His Cys Pro Ala Cys Gln Cys Asn Gly His Ser Lys Cys Ile
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 Asn Gln Ser Ile Cys Glu Lys Cys Glu Asn Leu Thr Thr Gly Lys His
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 Cys Glu Thr Cys Ile Ser Gly Phe Tyr Gly Asp Pro Thr Asn Gly Gly
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 Lys Cys Gln Pro Cys Lys Cys Asn Gly His Ala Ser Leu Cys Asn Thr
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 Cys Gln Leu Cys Glu Val Glu Asn Arg Tyr Gln Gly Asn Pro Leu Arg
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 Gly Thr Cys Tyr Tyr Thr Leu Leu Ile Asp Tyr Gln Phe Thr Phe Ser
 1155 1160 1165
 Leu Ser Gln Glu Asp Asp Arg Tyr Tyr Thr Ala Ile Asn Phe Val Ala
 1170 1175 1180
 Thr Pro Asp Glu Gln Asn Arg Asp Leu Asp Met Phe Ile Asn Ala Ser
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 Lys Asn Phe Asn Leu Asn Ile Thr Trp Ala Ala Ser Phe Ser Ala Gly

1205 1210 1215
 Thr Gln Ala Gly Glu Glu Met Pro Val Val Ser Lys Thr Asn Ile Lys
 1220 1225 1230
 Glu Tyr Lys Asp Ser Phe Ser Asn Glu Lys Phe Asp Phe Arg Asn His
 1235 1240 1245
 Pro Asn Ile Thr Phe Phe Val Tyr Val Ser Asn Phe Thr Trp Pro Ile
 1250 1255 1260
 Lys Ile Gln Ile Ala Phe Ser Gln His Ser Asn Phe Met Asp Leu Val
 1265 1270 1275 1280
 Gln Phe Phe Val Thr Phe Phe Ser Cys Phe Leu Ser Leu Leu Leu Val
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 Ala Ala Val Val Trp Lys Ile Lys Gln Ser Cys Trp Ala Ser Arg Arg
 1300 1305 1310
 Arg Glu Gln Leu Leu Arg Glu Met Gln Gln Met Ala Ser Arg Pro Phe
 1315 1320 1325
 Ala Ser Val Asn Val Ala Leu Glu Thr Asp Glu Glu Pro Pro Asp Leu
 1330 1335 1340
 Ile Gly Gly Ser Ile Lys Thr Val Pro Lys Pro Ile Ala Leu Glu Pro
 1345 1350 1355 1360
 Cys Phe Gly Asn Lys Ala Ala Val Leu Ser Val Phe Val Arg Leu Pro
 1365 1370 1375
 Arg Gly Leu Gly Gly Ile Pro Pro Pro Gly Gln Ser Gly Leu Ala Val
 1380 1385 1390
 Ala Ser Ala Leu Val Asp Ile Ser Gln Gln Met Pro Ile Val Tyr Lys
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 Ala Ala Thr Ala Ala Leu Ala Gly Arg Ser Gly Gly Pro His Trp Asp
 20 25 30
 tgg gac gtg acc agg gct ggg agg ccg ggg ctg ggg gcc ggg ctg cgc 144
 Trp Asp Val Thr Arg Ala Gly Arg Pro Gly Leu Gly Ala Gly Leu Arg
 35 40 45
 ctc ccg cgg ctg ctg tct cca ccg ctg cgg cca ccg ctg ctg ctg ctg 192
 Leu Pro Arg Leu Leu Ser Pro Pro Leu Arg Pro Arg Leu Leu Leu Leu
 50 55 60
 ctg ttg ttg ctc ccg ccg ccg ctg ttg ctg ctg ctg ccc tgt gag 240

Leu	Leu	Leu	Leu	Pro	Pro	Pro	Leu	Leu	Leu	Leu	Leu	Leu	Pro	Cys	Glu		
65						70					75				80		
gcc	gag	gcc	gcg	gcg	gcg	gcg	gcg	gcg	gtg	tcg	ggc	tca	gcc	gca	gcc		288
Ala	Glu	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Val	Ser	Gly	Ser	Ala	Ala	Ala		
				85					90					95			
gag	gcc	aag	gaa	tgt	gac	cgg	ccc	tgt	gtc	aac	ggc	ggt	cgc	tgc	aac		336
Glu	Ala	Lys		Cys	Asp	Arg	Pro	Cys	Val	Asn	Gly	Gly	Arg	Cys	Asn		
			100					105					110				
cct	ggc	acc	ggc	cag	tgc	gtc	tgc	ccc	gcc	ggc	tgg	gtg	ggc	gag	caa		384
Pro	Gly	Thr	Gly	Gln	Cys	Val	Cys	Pro	Ala	Gly	Trp	Val	Gly	Glu	Gln		
		115					120					125					
tgc	cag	cac	tgc	ggg	ggc	cgc	ttc	aga	cta	act	gga	tct	tct	ggg	ttt		432
Cys	Gln	His	Cys	Gly	Gly	Arg	Phe	Arg	Leu	Thr	Gly	Ser	Ser	Gly	Phe		
	130					135					140						
gtg	aca	gat	gga	cct	gga	aat	tat	aaa	tac	aaa	acg	aag	tgc	acg	tgg		480
Val	Thr	Asp	Gly	Pro	Gly	Asn	Tyr	Lys	Tyr	Lys	Thr	Lys	Cys	Thr	Trp		
145					150					155					160		
ctc	att	gaa	gga	cag	cca	aat	aga	ata	atg	aga	ctt	cgt	ttc	aat	cat		528
Leu	Ile	Glu	Gly	Gln	Pro	Asn	Arg	Ile	Met	Arg	Leu	Arg	Phe	Asn	His		
				165					170					175			
ttt	gct	aca	gag	tgt	agt	tgg	gac	cat	tta	tat	gtt	tat	gat	ggg	gac		576
Phe	Ala	Thr	Glu	Cys	Ser	Trp	Asp	His	Leu	Tyr	Val	Tyr	Asp	Gly	Asp		
			180					185					190				
tca	att	tat	gca	ccg	cta	gtt	gct	gca	ttt	agt	ggc	ctc	att	gtt	cct		624
Ser	Ile	Tyr	Ala	Pro	Leu	Val	Ala	Ala	Phe	Ser	Gly	Leu	Ile	Val	Pro		
		195					200					205					
gag	aga	gat	ggc	aat	gag	act	gtc	cct	gag	gtt	gtt	gcc	aca	tca	ggt		672
Glu	Arg	Asp	Gly	Asn	Glu	Thr	Val	Pro	Glu	Val	Val	Ala	Thr	Ser	Gly		
	210					215					220						
tat	gcc	ttg	ctg	cat	ttt	ttt	agt	gat	gct	gct	tat	aat	ttg	act	gga		720
Tyr	Ala	Leu	Leu	His	Phe	Phe	Ser	Asp	Ala	Ala	Tyr	Asn	Leu	Thr	Gly		
225					230					235				240			
ttt	aat	att	act	tac	agt	ttt	gat	atg	tgt	cca	aat	aac	tgc	tca	ggc		768
Phe	Asn	Ile	Thr	Tyr	Ser	Phe	Asp	Met	Cys	Pro	Asn	Asn	Cys	Ser	Gly		
			245						250				255				
cga	gga	gag	tgt	aag	atc	agt	aat	agc	agc	gaa	act	gtt	gaa	tgt	gaa		816
Arg	Gly	Glu	Cys	Lys	Ile	Ser	Asn	Ser	Ser	Glu	Thr	Val	Glu	Cys	Glu		
			260					265					270				
tgt	tct	gaa	aac	tgg	aaa	ggt	gaa	gca	tgt	gac	att	cct	cac	tgt	aca		864
Cys	Ser	Glu	Asn	Trp	Lys	Gly	Glu	Ala	Cys	Asp	Ile	Pro	His	Cys	Thr		
		275					280					285					
gac	aac	tgt	ggt	ttt	cct	cat	cga	ggc	atc	tgc	aat	tca	agt	gat	gtc		912
Asp	Asn	Cys	Gly	Phe	Pro	His	Arg	Gly	Ile	Cys	Asn	Ser	Ser	Asp	Val		

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aga gga tgc tcc tgc ttc tca gac tgg cag ggt cct gga tgt tca gtt			960
Arg Gly Cys Ser Cys Phe Ser Asp Trp Gln Gly Pro Gly Cys Ser Val			
305	310	315	320
cct gta cca gct aac cag tca ttt tgg act cga gag gaa tat tct aac			1008
Pro Val Pro Ala Asn Gln Ser Phe Trp Thr Arg Glu Glu Tyr Ser Asn			
	325	330	335
tta aag ctc ccc aga gca tct cat aaa gct gtg gtc aat gga aac att			1056
Leu Lys Leu Pro Arg Ala Ser His Lys Ala Val Val Asn Gly Asn Ile			
	340	345	350
atg tgg gtt gtt gga gga tat atg ttc aac cac tca gat tat aac atg			1104
Met Trp Val Val Gly Gly Tyr Met Phe Asn His Ser Asp Tyr Asn Met			
	355	360	365
gtt cta gcg tat gac ctt gct tct agg gag tgg ctt cca cta aac cgt			1152
Val Leu Ala Tyr Asp Leu Ala Ser Arg Glu Trp Leu Pro Leu Asn Arg			
	370	375	380
tct gtg aac aat gtg gtt gtt aga tat ggt cat tct ttg gca tta tac			1200
Ser Val Asn Asn Val Val Val Arg Tyr Gly His Ser Leu Ala Leu Tyr			
	385	390	400
aag gat aaa att tac atg tat gga gga aaa att gat cca act ggg aat			1248
Lys Asp Lys Ile Tyr Met Tyr Gly Gly Lys Ile Asp Pro Thr Gly Asn			
	405	410	415
gtg acc aat gag ttg aga gtt ttt cac att cat aat gag tca tgg gtg			1296
Val Thr Asn Glu Leu Arg Val Phe His Ile His Asn Glu Ser Trp Val			
	420	425	430
ttg ttg acc cct aag gca aag gag cag tat gca gtg gtt ggg cac tct			1344
Leu Leu Thr Pro Lys Ala Lys Glu Gln Tyr Ala Val Val Gly His Ser			
	435	440	445
gca cac att gtt aca ctg aag aat ggc cga gtg gtc atg ctg gtc atc			1392
Ala His Ile Val Thr Leu Lys Asn Gly Arg Val Val Met Leu Val Ile			
	450	455	460
ttt ggt cac tgc cct ctc tat gga tat ata agc aat gtg cag gaa tat			1440
Phe Gly His Cys Pro Leu Tyr Gly Tyr Ile Ser Asn Val Gln Glu Tyr			
	465	470	480
gat ttg gat aag aac aca tgg agt ata tta cac acc cag ggt gcc ctt			1488
Asp Leu Asp Lys Asn Thr Trp Ser Ile Leu His Thr Gln Gly Ala Leu			
	485	490	495
gtg caa ggg ggt tac ggc cat agc agt gtt tac gac cat agg acc agg			1536
Val Gln Gly Gly Tyr Gly His Ser Ser Val Tyr Asp His Arg Thr Arg			
	500	505	510
gcc cta tac gtt cat ggt ggc tac aag gct ttc agt gcc aat aag tac			1584
Ala Leu Tyr Val His Gly Gly Tyr Lys Ala Phe Ser Ala Asn Lys Tyr			
	515	520	525

cgg ctt gca gat gat ctc tac cga tat gat gtg gat acc cag atg tgg Arg Leu Ala Asp Asp Leu Tyr Arg Tyr Asp Val Asp Thr Gln Met Trp 530 535 540	1632
acc att ctt aag gac agc cga ttt ttc cgt tac ttg cac aca gct gtg Thr Ile Leu Lys Asp Ser Arg Phe Phe Arg Tyr Leu His Thr Ala Val 545 550 555 560	1680
ata gtg agt gga acc atg ctg gtg ttt ggg gga aac aca cac aat gac Ile Val Ser Gly Thr Met Leu Val Phe Gly Gly Asn Thr His Asn Asp 565 570 575	1728
aca tct atg agc cat ggc gcc aaa tgc ttc tct tca gat ttc atg gcc Thr Ser Met Ser His Gly Ala Lys Cys Phe Ser Ser Asp Phe Met Ala 580 585 590	1776
tat gac att gcc tgt gac cgc tgg tca gtg ctt ccc aga cct gat ctc Tyr Asp Ile Ala Cys Asp Arg Trp Ser Val Leu Pro Arg Pro Asp Leu 595 600 605	1824
cac cat gat gtc aac aga ttt ggc cat tca gca gtc tta cac aac agc His His Asp Val Asn Arg Phe Gly His Ser Ala Val Leu His Asn Ser 610 615 620	1872
acc atg tat gtg ttc ggt ggt ttc aat agt ctc ctc ctc agc gac atc Thr Met Tyr Val Phe Gly Gly Phe Asn Ser Leu Leu Leu Ser Asp Ile 625 630 635 640	1920
ctg gta ttc acc tcg gaa cag tgt gat gcg cat cgg agt gaa gcc gct Leu Val Phe Thr Ser Glu Gln Cys Asp Ala His Arg Ser Glu Ala Ala 645 650 655	1968
tgt tta gca gca gga cct ggt att cgg tgt gtg tgg aac aca ggg tcg Cys Leu Ala Ala Gly Pro Gly Ile Arg Cys Val Trp Asn Thr Gly Ser 660 665 670	2016
tct cag tgt atc tcg tgg gcg ctg gca act gat gaa caa gaa gaa aag Ser Gln Cys Ile Ser Trp Ala Leu Ala Thr Asp Glu Gln Glu Glu Lys 675 680 685	2064
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ggc cag atc tcc att ttt agg tat gag aat tgc ccc aag gat aac ccc Gly Gln Ile Ser Ile Phe Arg Tyr Glu Asn Cys Pro Lys Asp Asn Pro 740 745 750	2256

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cag aac tgc cag tgg gag ccc cgg aat cag gag tgc att gcc ctg ccc Gln Asn Cys Gln Trp Glu Pro Arg Asn Gln Glu Cys Ile Ala Leu Pro 770 775 780	2352
gaa aat atc tgt ggc att ggc tgg cat ttg gtt gga aac tca tgt ttg Glu Asn Ile Cys Gly Ile Gly Trp His Leu Val Gly Asn Ser Cys Leu 785 790 795 800	2400
aaa att act act gcc aag gag aat tat gac aat gct aaa ttg ttc tgt Lys Ile Thr Thr Ala Lys Glu Asn Tyr Asp Asn Ala Lys Leu Phe Cys 805 810 815	2448
agg aac cac aat gcc ctt ttg gct tct ctt aca acc cag aag aag gta Arg Asn His Asn Ala Leu Leu Ala Ser Leu Thr Thr Gln Lys Lys Val 820 825 830	2496
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tcc tac tgg tgc tgg gaa gat atg tcc cca ttt aca aat agt tta cta Ser Tyr Trp Cys Trp Glu Asp Met Ser Pro Phe Thr Asn Ser Leu Leu 865 870 875 880	2640
cag tgg atg ccg tct gag ccc agt gat gct gga ttc tgt gga att tta Gln Trp Met Pro Ser Glu Pro Ser Asp Ala Gly Phe Cys Gly Ile Leu 885 890 895	2688
tca gaa ccc agt act cgg gga ctg aag gct gca acc tgc atc aac cca Ser Glu Pro Ser Thr Arg Gly Leu Lys Ala Ala Thr Cys Ile Asn Pro 900 905 910	2736
ctc aat ggt agt gtc tgt gaa agg cct gca aac cac agt gct aag cag Leu Asn Gly Ser Val Cys Glu Arg Pro Ala Asn His Ser Ala Lys Gln 915 920 925	2784
tgc cgg aca cca tgt gcc ttg agg aca gca tgt gga gat tgc acc agc Cys Arg Thr Pro Cys Ala Leu Arg Thr Ala Cys Gly Asp Cys Thr Ser 930 935 940	2832
ggc agc tct gag tgc atg tgg tgc agc aac atg aag cag tgt gtg gac Gly Ser Ser Glu Cys Met Trp Cys Ser Asn Met Lys Gln Cys Val Asp 945 950 955 960	2880
tcc aat gcc tat gtg gcc tcc ttc cct ttt ggc cag tgt atg gaa tgg Ser Asn Ala Tyr Val Ala Ser Phe Pro Phe Gly Gln Cys Met Glu Trp 965 970 975	2928
tat acg atg agc acc tgc ccc cct gaa aat tgt tca ggc tac tgt acc	2976

Tyr Thr Met Ser Thr Cys Pro Pro Glu Asn Cys Ser Gly Tyr Cys Thr	
980 985 990	
tgt agt cat tgc ttg gag caa cca ggc tgt ggc tgg tgt act gat ccc	3024
Cys Ser His Cys Leu Glu Gln Pro Gly Cys Gly Trp Cys Thr Asp Pro	
995 1000 1005	
agc aat act ggc aaa ggg aaa tgc ata gag ggt tcc tat aaa gga cca	3072
Ser Asn Thr Gly Lys Gly Lys Cys Ile Glu Gly Ser Tyr Lys Gly Pro	
1010 1015 1020	
gtg aag atg cct tgc caa gcc cct aca gga aat ttc tat cca cag ccc	3120
Val Lys Met Pro Ser Gln Ala Pro Thr Gly Asn Phe Tyr Pro Gln Pro	
1025 1030 1035 1040	
ctg ctc aat tcc agc atg tgt cta gag gac agc aga tac aac tgg tct	3168
Leu Leu Asn Ser Ser Met Cys Leu Glu Asp Ser Arg Tyr Asn Trp Ser	
1045 1050 1055	
ttc att cac tgt cca gct tgc caa tgc aac ggc cac agt aaa tgc atc	3216
Phe Ile His Cys Pro Ala Cys Gln Cys Asn Gly His Ser Lys Cys Ile	
1060 1065 1070	
aat cag agc atc tgt gag aag tgt gag aac ctg acc aca ggc aag cac	3264
Asn Gln Ser Ile Cys Glu Lys Cys Glu Asn Leu Thr Thr Gly Lys His	
1075 1080 1085	
tgc gag acc tgc ata tct ggc ttc tac ggt gat ccc acc aat gga ggg	3312
Cys Glu Thr Cys Ile Ser Gly Phe Tyr Gly Asp Pro Thr Asn Gly Gly	
1090 1095 1100	
aaa tgt cag cca tgc aag tgc aat ggg cac gcg tct ctg tgc aac acc	3360
Lys Cys Gln Pro Cys Lys Cys Asn Gly His Ala Ser Leu Cys Asn Thr	
1105 1110 1115 1120	
aac acg ggc aag tgc ttc tgc acc acc aag ggc gtc aag ggg gac gag	3408
Asn Thr Gly Lys Cys Phe Cys Thr Thr Lys Gly Val Lys Gly Asp Glu	
1125 1130 1135	
tgc cag cta tgt gag gta gaa aat cga tac caa gga aac cct ctc aga	3456
Cys Gln Leu Cys Glu Val Glu Asn Arg Tyr Gln Gly Asn Pro Leu Arg	
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gga aca tgt tat tat act ctt ctt att gac tat cag ttc acc ttt agt	3504
Gly Thr Cys Tyr Tyr Thr Leu Leu Ile Asp Tyr Gln Phe Thr Phe Ser	
1155 1160 1165	
cta tcc cag gaa gat gat cgc tat tac aca gct atc aat ttt gtg gct	3552
Leu Ser Gln Glu Asp Asp Arg Tyr Tyr Thr Ala Ile Asn Phe Val Ala	
1170 1175 1180	
act cct gac gaa caa aac agg gat ttg gac atg ttc atc aat gcc tcc	3600
Thr Pro Asp Glu Gln Asn Arg Asp Leu Asp Met Phe Ile Asn Ala Ser	
1185 1190 1195 1200	
aag aat ttc aac ctc aac atc acc tgg gct gcc agt ttc tca gct gga	3648
Lys Asn Phe Asn Leu Asn Ile Thr Trp Ala Ala Ser Phe Ser Ala Gly	

1205	1210	1215	
acc cag gct gga gaa gag atg cct gtt gtt tca aaa acc aac att aag Thr Gln Ala Gly Glu Glu Met Pro Val Val Ser Lys Thr Asn Ile Lys 1220 1225 1230			3696
gag tac aaa gat agt ttc tct aat gag aag ttt gat ttt cgc aac cac Glu Tyr Lys Asp Ser Phe Ser Asn Glu Lys Phe Asp Phe Arg Asn His 1235 1240 1245			3744
cca aat atc act ttc ttt gtt tat gtc agt aat ttc acc tgg ccc atc Pro Asn Ile Thr Phe Phe Val Tyr Val Ser Asn Phe Thr Trp Pro Ile 1250 1255 1260			3792
aaa att cag att gcc ttc tct cag cac agc aat ttt atg gac ctg gta Lys Ile Gln Ile Ala Phe Ser Gln His Ser Asn Phe Met Asp Leu Val 1265 1270 1275 1280			3840
cag ttc ttc gtg act ttc ttc agt tgt ttc ctc tct ttg ctc ctg gtg Gln Phe Phe Val Thr Phe Phe Ser Cys Phe Leu Ser Leu Leu Leu Val 1285 1290 1295			3888
gct gct gtg gtt tgg aag atc aaa caa agt tgt tgg gcc tcc aga cgt Ala Ala Val Val Trp Lys Ile Lys Gln Ser Cys Trp Ala Ser Arg Arg 1300 1305 1310			3936
aga gag caa ctt ctt cga gag atg caa cag atg gcc agc cgt ccc ttt Arg Glu Gln Leu Leu Arg Glu Met Gln Gln Met Ala Ser Arg Pro Phe 1315 1320 1325			3984
gcc tct gta aat gtc gcc ttg gaa aca gat gag gag cct cct gat ctt Ala Ser Val Asn Val Ala Leu Glu Thr Asp Glu Glu Pro Pro Asp Leu 1330 1335 1340			4032
att ggg ggg agt ata aag act gtt ccc aaa ccc att gca ctg gag ccg Ile Gly Gly Ser Ile Lys Thr Val Pro Lys Pro Ile Ala Leu Glu Pro 1345 1350 1355 1360			4080
tgt ttt ggc aac aaa gcc gct gtc ctc tct gtg ttt gtg agg ctc cct Cys Phe Gly Asn Lys Ala Ala Val Leu Ser Val Phe Val Arg Leu Pro 1365 1370 1375			4128
cga ggc ctg ggt ggc atc cct cct cct ggg cag tca ggt ctt gct gtg Arg Gly Leu Gly Gly Ile Pro Pro Pro Gly Gln Ser Gly Leu Ala Val 1380 1385 1390			4176
gcc agc gcc ctg gtg gac att tct cag cag atg ccg ata gtg tac aag Ala Ser Ala Leu Val Asp Ile Ser Gln Gln Met Pro Ile Val Tyr Lys 1395 1400 1405			4224
gag aag tca gga gcc gtg aga aac cgg aag cag cag ccc cct gca cag Glu Lys Ser Gly Ala Val Arg Asn Arg Lys Gln Gln Pro Pro Ala Gln 1410 1415 1420			4272
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 Lys Asp Glu Leu
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<210> 18
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 Trp Asp Val Thr Arg Ala Gly Arg Pro Gly Leu Gly Ala Gly Leu Arg
 35 40 45
 Leu Pro Arg Leu Leu Ser Pro Pro Leu Arg Pro Arg Leu Leu Leu Leu
 50 55 60
 Leu Leu Leu Leu Pro Pro Pro Leu Leu Leu Leu Leu Leu Pro Cys Glu
 65 70 75 80
 Ala Glu Ala Ala Ala Ala Ala Ala Val Ser Gly Ser Ala Ala Ala
 85 90 95

Glu	Ala	Lys	Glu	Cys	Asp	Arg	Pro	Cys	Val	Asn	Gly	Gly	Arg	Cys	Asn	100	105	110
Pro	Gly	Thr	Gly	Gln	Cys	Val	Cys	Pro	Ala	Gly	Trp	Val	Gly	Glu	Gln	115	120	125
Cys	Gln	His	Cys	Gly	Gly	Arg	Phe	Arg	Leu	Thr	Gly	Ser	Ser	Gly	Phe	130	135	140
Val	Thr	Asp	Gly	Pro	Gly	Asn	Tyr	Lys	Tyr	Lys	Thr	Lys	Cys	Thr	Trp	145	150	155
Leu	Ile	Glu	Gly	Gln	Pro	Asn	Arg	Ile	Met	Arg	Leu	Arg	Phe	Asn	His	165	170	175
Phe	Ala	Thr	Glu	Cys	Ser	Trp	Asp	His	Leu	Tyr	Val	Tyr	Asp	Gly	Asp	180	185	190
Ser	Ile	Tyr	Ala	Pro	Leu	Val	Ala	Ala	Phe	Ser	Gly	Leu	Ile	Val	Pro	195	200	205
Glu	Arg	Asp	Gly	Asn	Glu	Thr	Val	Pro	Glu	Val	Val	Ala	Thr	Ser	Gly	210	215	220
Tyr	Ala	Leu	Leu	His	Phe	Phe	Ser	Asp	Ala	Ala	Tyr	Asn	Leu	Thr	Gly	225	230	235
Phe	Asn	Ile	Thr	Tyr	Ser	Phe	Asp	Met	Cys	Pro	Asn	Asn	Cys	Ser	Gly	245	250	255
Arg	Gly	Glu	Cys	Lys	Ile	Ser	Asn	Ser	Ser	Glu	Thr	Val	Glu	Cys	Glu	260	265	270
Cys	Ser	Glu	Asn	Trp	Lys	Gly	Glu	Ala	Cys	Asp	Ile	Pro	His	Cys	Thr	275	280	285
Asp	Asn	Cys	Gly	Phe	Pro	His	Arg	Gly	Ile	Cys	Asn	Ser	Ser	Asp	Val	290	295	300
Arg	Gly	Cys	Ser	Cys	Phe	Ser	Asp	Trp	Gln	Gly	Pro	Gly	Cys	Ser	Val	305	310	315
Pro	Val	Pro	Ala	Asn	Gln	Ser	Phe	Trp	Thr	Arg	Glu	Glu	Tyr	Ser	Asn	325	330	335
Leu	Lys	Leu	Pro	Arg	Ala	Ser	His	Lys	Ala	Val	Val	Asn	Gly	Asn	Ile	340	345	350
Met	Trp	Val	Val	Gly	Gly	Tyr	Met	Phe	Asn	His	Ser	Asp	Tyr	Asn	Met	355	360	365
Val	Leu	Ala	Tyr	Asp	Leu	Ala	Ser	Arg	Glu	Trp	Leu	Pro	Leu	Asn	Arg	370	375	380
Ser	Val	Asn	Asn	Val	Val	Val	Arg	Tyr	Gly	His	Ser	Leu	Ala	Leu	Tyr	385	390	395
Lys	Asp	Lys	Ile	Tyr	Met	Tyr	Gly	Gly	Lys	Ile	Asp	Pro	Thr	Gly	Asn	405	410	415
Val	Thr	Asn	Glu	Leu	Arg	Val	Phe	His	Ile	His	Asn	Glu	Ser	Trp	Val	420	425	430
Leu	Leu	Thr	Pro	Lys	Ala	Lys	Glu	Gln	Tyr	Ala	Val	Val	Gly	His	Ser	435	440	445
Ala	His	Ile	Val	Thr	Leu	Lys	Asn	Gly	Arg	Val	Val	Met	Leu	Val	Ile	450	455	460
Phe	Gly	His	Cys	Pro	Leu	Tyr	Gly	Tyr	Ile	Ser	Asn	Val	Gln	Glu	Tyr	465	470	475
Asp	Leu	Asp	Lys	Asn	Thr	Trp	Ser	Ile	Leu	His	Thr	Gln	Gly	Ala	Leu	485	490	495
Val	Gln	Gly	Gly	Tyr	Gly	His	Ser	Ser	Val	Tyr	Asp	His	Arg	Thr	Arg	500	505	510
Ala	Leu	Tyr	Val	His	Gly	Gly	Tyr	Lys	Ala	Phe	Ser	Ala	Asn	Lys	Tyr	515	520	525
Arg	Leu	Ala	Asp	Asp	Leu	Tyr	Arg	Tyr	Asp	Val	Asp	Thr	Gln	Met	Trp	530	535	540
Thr	Ile	Leu	Lys	Asp	Ser	Arg	Phe	Phe	Arg	Tyr	Leu	His	Thr	Ala	Val			

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Thr	Ser	Met	Ser	His	Gly	Ala	Lys	Cys	Phe	Ser	Ser	Asp	Phe	Met	Ala
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Tyr	Asp	Ile	Ala	Cys	Asp	Arg	Trp	Ser	Val	Leu	Pro	Arg	Pro	Asp	Leu
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His	His	Asp	Val	Asn	Arg	Phe	Gly	His	Ser	Ala	Val	Leu	His	Asn	Ser
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Thr	Met	Tyr	Val	Phe	Gly	Gly	Phe	Asn	Ser	Leu	Leu	Leu	Ser	Asp	Ile
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Leu	Val	Phe	Thr	Ser	Glu	Gln	Cys	Asp	Ala	His	Arg	Ser	Glu	Ala	Ala
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Cys	Leu	Ala	Ala	Gly	Pro	Gly	Ile	Arg	Cys	Val	Trp	Asn	Thr	Gly	Ser
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	675						680					685			
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Asp	Gln	His	Thr	Asp	Cys	Tyr	Ser	Cys	Thr	Ala	Asn	Thr	Asn	Asp	Cys
705					710					715					720
His	Trp	Cys	Asn	Asp	His	Cys	Val	Pro	Arg	Asn	His	Ser	Cys	Ser	Glu
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Gly	Gln	Ile	Ser	Ile	Phe	Arg	Tyr	Glu	Asn	Cys	Pro	Lys	Asp	Asn	Pro
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Met	Tyr	Tyr	Cys	Asn	Lys	Lys	Thr	Ser	Cys	Arg	Ser	Cys	Ala	Leu	Asp
		755					760					765			
Gln	Asn	Cys	Gln	Trp	Glu	Pro	Arg	Asn	Gln	Glu	Cys	Ile	Ala	Leu	Pro
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Glu	Asn	Ile	Cys	Gly	Ile	Gly	Trp	His	Leu	Val	Gly	Asn	Ser	Cys	Leu
785					790					795					800
Lys	Ile	Thr	Thr	Ala	Lys	Glu	Asn	Tyr	Asp	Asn	Ala	Lys	Leu	Phe	Cys
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Arg	Asn	His	Asn	Ala	Leu	Leu	Ala	Ser	Leu	Thr	Thr	Gln	Lys	Lys	Val
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Glu	Phe	Val	Leu	Lys	Gln	Leu	Arg	Ile	Met	Gln	Ser	Ser	Gln	Ser	Met
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Ser	Lys	Leu	Thr	Leu	Thr	Pro	Trp	Val	Gly	Leu	Arg	Lys	Ile	Asn	Val
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Ser	Tyr	Trp	Cys	Trp	Glu	Asp	Met	Ser	Pro	Phe	Thr	Asn	Ser	Leu	Leu
865					870					875					880
Gln	Trp	Met	Pro	Ser	Glu	Pro	Ser	Asp	Ala	Gly	Phe	Cys	Gly	Ile	Leu
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Ser	Glu	Pro	Ser	Thr	Arg	Gly	Leu	Lys	Ala	Ala	Thr	Cys	Ile	Asn	Pro
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Leu	Asn	Gly	Ser	Val	Cys	Glu	Arg	Pro	Ala	Asn	His	Ser	Ala	Lys	Gln
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Cys	Arg	Thr	Pro	Cys	Ala	Leu	Arg	Thr	Ala	Cys	Gly	Asp	Cys	Thr	Ser
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Gly	Ser	Ser	Glu	Cys	Met	Trp	Cys	Ser	Asn	Met	Lys	Gln	Cys	Val	Asp
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Ser	Asn	Ala	Tyr	Val	Ala	Ser	Phe	Pro	Phe	Gly	Gln	Cys	Met	Glu	Trp
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Tyr	Thr	Met	Ser	Thr	Cys	Pro	Pro	Glu	Asn	Cys	Ser	Gly	Tyr	Cys	Thr
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Cys	Ser	His	Cys	Leu	Glu	Gln	Pro	Gly	Cys	Gly	Trp	Cys	Thr	Asp	Pro

995 1000 1005
 Ser Asn Thr Gly Lys Gly Lys Cys Ile Glu Gly Ser Tyr Lys Gly Pro
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 Val Lys Met Pro Ser Gln Ala Pro Thr Gly Asn Phe Tyr Pro Gln Pro
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 Phe Ile His Cys Pro Ala Cys Gln Cys Asn Gly His Ser Lys Cys Ile
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 1090 1095 1100
 Lys Cys Gln Pro Cys Lys Cys Asn Gly His Ala Ser Leu Cys Asn Thr
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 Asn Thr Gly Lys Cys Phe Cys Thr Thr Lys Gly Val Lys Gly Asp Glu
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 1140 1145 1150
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 1170 1175 1180
 Thr Pro Asp Glu Gln Asn Arg Asp Leu Asp Met Phe Ile Asn Ala Ser
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 Lys Asn Phe Asn Leu Asn Ile Thr Trp Ala Ala Ser Phe Ser Ala Gly
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 Glu Tyr Lys Asp Ser Phe Ser Asn Glu Lys Phe Asp Phe Arg Asn His
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 Pro Asn Ile Thr Phe Phe Val Tyr Val Ser Asn Phe Thr Trp Pro Ile
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 Ala Ala Thr Ala Ala Leu Ala Gly Arg Ser Gly Gly Pro His Trp Asp
 20 25 30
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 Trp Asp Val Thr Arg Ala Gly Arg Pro Gly Leu Gly Ala Gly Leu Arg
 35 40 45

ctc ccg cgg ctg ctg tct cca ccg ctg cgg cca ccg ctg ctg ctg ctg	192
Leu Pro Arg Leu Leu Ser Pro Pro Leu Arg Pro Arg Leu Leu Leu Leu	
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Leu Leu Leu Leu Pro Pro Pro Leu Leu Leu Leu Leu Leu Pro Cys Glu	
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Ala Glu Ala Ala Ala Ala Ala Ala Ala Val Ser Gly Ser Ala Ala Ala	
85 90 95	
gag gcc aag gaa tgt gac cgg ccc tgt gtc aac ggc ggt cgc tgc aac	336
Glu Ala Lys Glu Cys Asp Arg Pro Cys Val Asn Gly Gly Arg Cys Asn	
100 105 110	
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Pro Gly Thr Gly Gln Cys Val Cys Pro Ala Gly Trp Val Gly Glu Gln	
115 120 125	
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Cys Gln His Cys Gly Gly Arg Phe Arg Leu Thr Gly Ser Ser Gly Phe	
130 135 140	
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Val Thr Asp Gly Pro Gly Asn Tyr Lys Tyr Lys Thr Lys Cys Thr Trp	
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Leu Ile Glu Gly Gln Pro Asn Arg Ile Met Arg Leu Arg Phe Asn His	
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Ser Ile Tyr Ala Pro Leu Val Ala Ala Phe Ser Gly Leu Ile Val Pro	
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Tyr Ala Leu Leu His Phe Phe Ser Asp Ala Ala Tyr Asn Leu Thr Gly	
225 230 235 240	
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Arg Gly Glu Cys Lys Ile Ser Asn Ser Ser Glu Thr Val Glu Cys Glu	
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gca cac att gtt aca ctg aag aat ggc cga gtg gtc atg ctg gtc atc Ala His Ile Val Thr Leu Lys Asn Gly Arg Val Val Met Leu Val Ile 450 455 460	1392
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Ala	Leu	Tyr	Val	His	Gly	Gly	Tyr	Lys	Ala	Phe	Ser	Ala	Asn	Lys	Tyr	
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cgg	ctt	gca	gat	gat	ctc	tac	cga	tat	gat	gtg	gat	acc	cag	atg	tgg	1632
Arg	Leu	Ala	Asp	Asp	Leu	Tyr	Arg	Tyr	Asp	Val	Asp	Thr	Gln	Met	Trp	
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acc	att	ctt	aag	gac	agc	cga	ttt	ttc	cgt	tac	ttg	cac	aca	gct	gtg	1680
Thr	Ile	Leu	Lys	Asp	Ser	Arg	Phe	Phe	Arg	Tyr	Leu	His	Thr	Ala	Val	
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Tyr	Asp	Ile	Ala	Cys	Asp	Arg	Trp	Ser	Val	Leu	Pro	Arg	Pro	Asp	Leu	
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cac	cat	gat	gtc	aac	aga	ttt	ggc	cat	tca	gca	gtc	tta	cac	aac	agc	1872
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Cys	Leu	Ala	Ala	Gly	Pro	Gly	Ile	Arg	Cys	Val	Trp	Asn	Thr	Gly	Ser	
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Ser	Gln	Cys	Ile	Ser	Trp	Ala	Leu	Ala	Thr	Asp	Glu	Gln	Glu	Glu	Lys	
		675					680					685				
tta	aaa	tca	gaa	tgt	ttt	tcc	aaa	aga	act	ctt	gac	cat	gac	aga	tgt	2112
Leu	Lys	Ser	Glu	Cys	Phe	Ser	Lys	Arg	Thr	Leu	Asp	His	Asp	Arg	Cys	
	690						695				700					
gac	cag	cac	aca	gat	tgt	tac	agc	tgt	aca	gcc	aac	acc	aat	gac	tgc	2160
Asp	Gln	His	Thr	Asp	Cys	Tyr	Ser	Cys	Thr	Ala	Asn	Thr	Asn	Asp	Cys	
705					710				715						720	
cac	tgg	tgc	aat	gac	cat	tgt	gtc	ccc	agg	aac	cac	agc	tgc	tca	gaa	2208
His	Trp	Cys	Asn	Asp	His	Cys	Val	Pro	Arg	Asn	His	Ser	Cys	Ser	Glu	

725								730				735				
ggc	cag	atc	tcc	att	ttt	agg	tat	gag	aat	tgc	ccc	aag	gat	aac	ccc	2256
Gly	Gln	Ile	Ser	Ile	Phe	Arg	Tyr	Glu	Asn	Cys	Pro	Lys	Asp	Asn	Pro	
740								745				750				
atg	tac	tac	tgt	aac	aag	aag	acc	agc	tgc	agg	agc	tgt	gcc	ctg	gac	2304
Met	Tyr	Tyr	Cys	Asn	Lys	Lys	Thr	Ser	Cys	Arg	Ser	Cys	Ala	Leu	Asp	
755								760				765				
cag	aac	tgc	cag	tgg	gag	ccc	cgg	aat	cag	gag	tgc	att	gcc	ctg	ccc	2352
Gln	Asn	Cys	Gln	Trp	Glu	Pro	Arg	Asn	Gln	Glu	Cys	Ile	Ala	Leu	Pro	
770								775				780				
gaa	aat	atc	tgt	ggc	att	ggc	tgg	cat	ttg	gtt	gga	aac	tca	tgt	ttg	2400
Glu	Asn	Ile	Cys	Gly	Ile	Gly	Trp	His	Leu	Val	Gly	Asn	Ser	Cys	Leu	
785								790				795				800
aaa	att	act	act	gcc	aag	gag	aat	tat	gac	aat	gct	aaa	ttg	ttc	tgt	2448
Lys	Ile	Thr	Thr	Ala	Lys	Glu	Asn	Tyr	Asp	Asn	Ala	Lys	Leu	Phe	Cys	
805								810				815				
agg	aac	cac	aat	gcc	ctt	ttg	gct	tct	ctt	aca	acc	cag	aag	aag	gta	2496
Arg	Asn	His	Asn	Ala	Leu	Leu	Ala	Ser	Leu	Thr	Thr	Gln	Lys	Lys	Val	
820								825				830				
gaa	ttt	gtc	ctt	aag	cag	ctg	cga	ata	atg	cag	tca	tct	cag	agc	atg	2544
Glu	Phe	Val	Leu	Lys	Gln	Leu	Arg	Ile	Met	Gln	Ser	Ser	Gln	Ser	Met	
835								840				845				
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Ser	Lys	Leu	Thr	Leu	Thr	Pro	Trp	Val	Gly	Leu	Arg	Lys	Ile	Asn	Val	
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Ser	Tyr	Trp	Cys	Trp	Glu	Asp	Met	Ser	Pro	Phe	Thr	Asn	Ser	Leu	Leu	
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cag	tgg	atg	ccg	tct	gag	ccc	agt	gat	gct	gga	ttc	tgt	gga	att	tta	2688
Gln	Trp	Met	Pro	Ser	Glu	Pro	Ser	Asp	Ala	Gly	Phe	Cys	Gly	Ile	Leu	
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Ser	Glu	Pro	Ser	Thr	Arg	Gly	Leu	Lys	Ala	Ala	Thr	Cys	Ile	Asn	Pro	
900								905				910				
ctc	aat	ggt	agt	gtc	tgt	gaa	agg	cct	gca	aac	cac	agt	gct	aag	cag	2784
Leu	Asn	Gly	Ser	Val	Cys	Glu	Arg	Pro	Ala	Asn	His	Ser	Ala	Lys	Gln	
915								920				925				
tgc	cgg	aca	cca	tgt	gcc	ttg	agg	aca	gca	tgt	gga	gat	tgc	acc	agc	2832
Cys	Arg	Thr	Pro	Cys	Ala	Leu	Arg	Thr	Ala	Cys	Gly	Asp	Cys	Thr	Ser	
930								935				940				
ggc	agc	tct	gag	tgc	atg	tgg	tgc	agc	aac	atg	aag	cag	tgt	gtg	gac	2880
Gly	Ser	Ser	Glu	Cys	Met	Trp	Cys	Ser	Asn	Met	Lys	Gln	Cys	Val	Asp	
945								950				955				960

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Ser Asn Ala Tyr Val Ala Ser Phe Pro Phe Gly Gln Cys Met Glu Trp	
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tat acg atg agc acc tgc ccc cct gaa aat tgt tca ggc tac tgt acc	2976
Tyr Thr Met Ser Thr Cys Pro Pro Glu Asn Cys Ser Gly Tyr Cys Thr	
980 985 990	
tgt agt cat tgc ttg gag caa cca ggc tgt ggc tgg tgt act gat ccc	3024
Cys Ser His Cys Leu Glu Gln Pro Gly Cys Gly Trp Cys Thr Asp Pro	
995 1000 1005	
agc aat act ggc aaa ggg aaa tgc ata gag ggt tcc tat aaa gga cca	3072
Ser Asn Thr Gly Lys Gly Lys Cys Ile Glu Gly Ser Tyr Lys Gly Pro	
1010 1015 1020	
gtg aag atg cct tcg caa gcc cct aca gga aat ttc tat cca cag ccc	3120
Val Lys Met Pro Ser Gln Ala Pro Thr Gly Asn Phe Tyr Pro Gln Pro	
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Leu Leu Asn Ser Ser Met Cys Leu Glu Asp Ser Arg Tyr Asn Trp Ser	
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ttc att cac tgt cca gct tgc caa tgc aac ggc cac agt aaa tgc atc	3216
Phe Ile His Cys Pro Ala Cys Gln Cys Asn Gly His Ser Lys Cys Ile	
1060 1065 1070	
aat cag agc atc tgt gag aag tgt gag aac ctg acc aca ggc aag cac	3264
Asn Gln Ser Ile Cys Glu Lys Cys Glu Asn Leu Thr Thr Gly Lys His	
1075 1080 1085	
tgc gag acc tgc ata tct ggc ttc tac ggt gat ccc acc aat gga ggg	3312
Cys Glu Thr Cys Ile Ser Gly Phe Tyr Gly Asp Pro Thr Asn Gly Gly	
1090 1095 1100	
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Lys Cys Gln Pro Cys Lys Cys Asn Gly His Ala Ser Leu Cys Asn Thr	
1105 1110 1115 1120	
aac acg ggc aag tgc ttc tgc acc acc aag ggc gtc aag ggg gac gag	3408
Asn Thr Gly Lys Cys Phe Cys Thr Thr Lys Gly Val Lys Gly Asp Glu	
1125 1130 1135	
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Cys Gln Leu Cys Glu Val Glu Asn Arg Tyr Gln Gly Asn Pro Leu Arg	
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Leu Ser Gln Glu Asp Asp Arg Tyr Tyr Thr Ala Ile Asn Phe Val Ala	
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 1220 1225 1230

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